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EXAMINER	
MOORE, IAN N	

ART UNIT	PAPER NUMBER
2661	9

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/624,072	HIRATA ET AL.	
	Examiner	Art Unit	
	Ian N Moore	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed on 7/24/2000 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it does not have proper format (i.e. Form PTO-1449). It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1,2,5,6,8,9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Lim (U.S. Patent 6,404,754).

Regarding claim 1, admitted prior art discloses a mobile IP network system comprising: a plurality of radio access networks each connected to mobile stations via radio links (Network 2A and 2B; Prior art Fig.8); and

an IP network (IP network 102; Prior art Fig.8) to which a plurality of packet nodes (Packet Nodes 3A and 3B; Prior art Fig.8) for transferring IP packets are connected,

wherein each of the radio access networks has at least one base station controller (Base Station Controller 7A, 7B, and 7C; Prior art Fig.8) and at least one radio base station (Base Stations 6A, 6B, and 6C; Prior art Fig.8) which is connected to the base station controller to perform radio communications with a mobile station (Mobile Station 1; Prior art Fig.8), and each of the base station controllers in the radio access network is connected to the plurality of packet nodes (Packet Nodes 3A and 3B; Prior art Fig.8).

Admitted Prior art does not explicitly disclose a plurality of mobile stations (see Lim '754 Fig. 2, Mobile Stations 100 and 200) and the radio base station controller selects one of the plurality of packet nodes in accordance with a state of each mobile station to establish a logical connection to be used in IP packet communication of the mobile station (see Lim '754 col. 5, line 62-67 to col. 6, line 1-7; the RNC 400 or 410 requests to the mobile switching center 500 the terminal node identifier address of the PDGN 600 to be connected thereto, and the mobile switching center 500 responds to the address of the PDGN 600 which is nearest to the RNC 400 or 410 among the PDGNs connected to its own network, and determines the packet data link between the RNC 400 or 410 and the PDGN 600 for transferring the point-to-point frame data between the terminal of the SIP option and the PDGN 600, so that the point-to-point link is connected between the mobile station 100 or 200 and the PDGN 600;

noted that that RNC/MSC establishes the packet data link by selecting one PDGN among other PDGNs, which are connected to each other via Internet/PPDN).

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of admitted prior art as taught by Lim '754 for the purpose of determining a point-to-point link by calling data service packets in accordance with the IP option, see Lim '754 col.3, line 5-6. The motivation being that by selecting appropriate gateway node for point-to-point link, it can efficiently route the calls.

Regarding Claim 2, admitted prior art plurality of packet node and selecting one of the plurality of packet nodes as described above in Claim 1.

Admitted prior art does not explicitly disclose said base station controllers selects, with respect to a mobile station moved from a control area of another radio access network to the control area of the base station controller, a previous packet node which has communicated with the mobile station in the control area of the another radio access network and to establish a logical connection for the mobile station (see Lim '754 col. 7, line 52-59, if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)). Noted that once the mobile station moves

out of the area, the new RNC establishes/installs a new virtual connection to original PDGN 600).

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Admitted Prior art as taught by Lim '754 for the same purpose as described in Claim 1.

Regarding Claim 5, admitted prior art disclose a home agent node (see admitted prior art Prior art Fig. 8, Home Agent 5) connected to the IP network (admitted prior art Prior art Fig.8, IP network 102).

Admitted prior art does not explicitly discloses each of the plurality of packet nodes has a foreign agent function for transferring an IP packet received from the IP network to any of the base station controllers (see Lim '754 col. 4, line 41-44; the PDGN 600 is a terminal of the radio data link protocol which performs the function of the point-to-point server, the foreign agent (FA) for the mobile Internet protocol).

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of admitted prior art as taught by Lim '754 for the same purpose as described above in Claim 1.

Regarding Claim 6, admitted prior art discloses a method of switching a connection for communication between a mobile station (Mobile Station 1; Prior art Fig.8) connected to any of a plurality of radio access networks (Network 2A and 2B; Prior art Fig.8) via a radio link and a plurality of packet nodes (Packet Nodes 3A and 3B; Prior art Fig.8) connected to an IP network (IP network 102; Prior art Fig.8).

Admitted prior art does not explicitly disclose a step of establishing a first logical connection to be used for an IP packet communication of a mobile station connected to a first radio access network, between the mobile station and a first packet node which is preliminarily related with the first radio access network (see Lim '754 col. 5, line 62-67 to col. 6, line 1-7; the RNC 400 or 410 requests to the mobile switching center 500 the terminal node identifier address of the PDGN 600 to be connected thereto, and the mobile switching center 500 responds to the address of the PDGN 600 which is nearest to the RNC 400 or 410 among the PDGNs connected to its own network, and determines the packet data link between the RNC 400 or 410 and the PDGN 600 for transferring the point-to-point frame data between the terminal of the SIP option and the PDGN 600, so that the point-to-point link is connected between the mobile station 100 or 200 and the PDGN 600);

a step of connecting the mobile station to a second radio access network adjacent to the first radio access network (see Lim '754 col. 7, line 50-56; if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43)); and

a step of establishing a second logical connection between the second radio access network and the first packet node (see Lim '754 col. 7, line 56-57; if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)),

wherein the IP packet communication between the mobile station and the first packet node is maintained via the second logical connection (see Lim '754 col. 7, line 33-43; if the PPP frame data is not transmitted, the RNC 400 or 410 or PDGN 600 drives a PPP link timer (S31 and S32). Thereafter, if the term set by the PPP link timer expires, the RNC 400 or PDGN 600 instructs to change the present active state to a dormant-open state (S32). If the PPP frame data is not transmitted in the dormant-open state, the RNC 400 or PDGN 600 drives a dormant timer (S35 and S26). If the term set by the dormant timer expires, the RNC 400 informs the mobile switching center 500 to release a switching virtual circuit (SVC) (S37). Noted that the virtual link is maintained/monitored by the timer if there is any data not transmitting.)

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of admitted prior art as taught by Lim '754 for the purpose of determining a point-to-point link by calling data service packets in accordance with the IP option, see Lim '754 col.3, line 5-6. The motivation being that by selecting appropriate gateway node for point-to-point link, it can efficiently route the calls.

Regarding Claim 8, admitted prior art discloses a base station controller (Base Station Controller 7A, 7B, or 7C; Prior art Fig.8) for a radio access network (Network 2A or 2B; Prior art Fig.8) for transmitting and receiving an IP packet to and from a packet node (Packet Nodes 3A and/or 3B; Prior art Fig.8) which is connected to an IP network (IP network 102; Prior art Fig.8) comprising:

a first communication interface for connection to a radio base station (Base Station 6A, 6B, 6C, or 6D; Prior art Fig.8), a second communication interface for communication with a plurality of packet nodes (Packet Nodes 3A and 3B; Prior art Fig.8) connected to the IP network, and a control unit (Base Station Controller 7A, 7B, or 7C; Prior art Fig.8) connected to the first (Base Station 6A, 6B, 6C, or 6D; Prior art Fig.8) and second communication interfaces (Packet Nodes 3A or 3B; Prior art Fig.8).

Admitted prior art does not explicitly disclose a base station controller has a foreign agent function (see Lim '754 col. 4, line 41-44; the PDGN 600 is a terminal of the radio data link protocol which performs the function of the point-to-point server, the foreign agent (FA) for the mobile Internet protocol), and the control unit selectively establishes a logical connection to be used for an IP packet communication of a mobile station connected to the radio base station via a radio channel, between the base station and any of the packet nodes via the second interface (see Lim '754 col. 5, line 62-67 to col. 6, line 1-7; the RNC 400 or 410 requests to the mobile switching center 500 the terminal node identifier address of the PDGN 600 to be connected thereto, and the mobile switching center 500 responds to the address of the PDGN 600 which is nearest to the RNC 400 or 410 among the PDGNs connected to its own network, and determines the packet data link between the RNC 400 or 410 and the PDGN 600 for transferring the point-to-point frame data between the terminal of the SIP option and the PDGN 600, so that the point-to-point link is connected between the mobile station 100 or 200 and the PDGN 600).

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of admitted

prior art as taught by Lim '754 for the purpose of determining a point-to-point link by calling data service packets in accordance with the IP option, see Lim '754 col.3, line 5-6. The motivation being that by selecting appropriate gateway node for point-to-point link, it can efficiently route the calls.

Regarding Claim 9, admitted prior art discloses a control unit (Base Station Controller 7A, 7B, or 7C; Prior art Fig.8) as described above in Claim 8.

Admitted prior art does not explicitly discloses said control unit has means for selecting a first packet node which has been communicating with a mobile station in a control area of another radio access network, to establish a first logical connection to be used for the IP packet communication of the mobile station which has moved into a control area of the base station controller from the another radio access network (see Lim '754 col. 7, line 52-59 if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)). Noted that once the mobile station moves out of the area, the controller/control unit establishes/installs a new virtual connection to original PDGN 600.)

This limitation is taught by Lim '754. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Admitted Prior art as taught by Lim '754 for the same purpose as described in Claim 8.

Regarding Claim 10, Admitted Prior art discloses a control unit (Base Station Controller 7A, 7B, or 7C; Prior art Fig.8) as described above in Claim 1.

Admitted prior art does not explicitly discloses said control unit has means for notifying a base station controller in another radio access network of identification information of a previous packet node which has communicated with the mobile station moved from a control area of the base station controller to the another radio access network (see Lim '754 col. 8, line 23-33; if a certain mobile station, after moving into the new RNC, transmits a re-originating call to the new RNC utilizing the IP option, access option, and dormant state information (S55), the mobile station should transmit the packet data after it sets a traffic channel with the new RNC (S53). Accordingly, the new RNC inquires of the mobile switching center 500 about the terminating terminal node identifier of the PDGN 600 utilizing the IP option, access option, and dormant state information (S56), and identifies the terminating terminal node identifier (S57);). Noted that the when the mobile station moves into a new area, a new base station controller inquires the MSC (which is a part of the "old/previous" base station controller) regarding the terminal packet node ID of PDGN node.)

3. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art and Lim '754, as applied to claim 1 above, and further in view of Dommety (U.S. Patent 6,078,575).

Regarding Claim 3, both admitted prior art and Lim '754 disclose said base station controllers has means for monitoring a transmitting and receiving state of data to and from a mobile station which has moved from the control area of another radio access network, thereby to cancel the logical connection between the base station controller and the previous packet node (see Lim '754 col. 7, line 32-44; if the PPP frame data is not transmitted, the RNC 400 or 410 or PDGN 600 drives a PPP link timer (S31 and S32). Thereafter, if the term set by the PPP link timer expires, the RNC 400 or PDGN 600 instructs to change the present active state to a dormant-open state (S32). If the PPP frame data is not transmitted in the dormant-open state, the RNC 400 or PDGN 600 drives a dormant timer (S35 and S26). If the term set by the dormant timer expires, the RNC 400 informs the mobile switching center 500 to release a switching virtual circuit (SVC) (S37). Accordingly, no more PPP frame data of another mobile station exists, and thus the virtual network pipeline (VNP) is released), to establish a new logical connection for the mobile station between the base station controller and a packet node, and upon detecting that data transmission and reception of the mobile station is ceased (see Lim '754 col. 7, line 52-59; if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the

previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)).

Neither admitted prior art nor Lim '754 explicitly discloses establishing a new logical connection for the preliminarily designated specific packet node (see Dommety '575 col. 10, line 6-10, the inventive route optimization arrangement is performed in two steps. The first step identifies a so-called "switchover node/switch" that may be used to switch the connection from an established path to an optimized path. A new path segment is then established from the route optimization-initiating switch to the switchover node. So-called "Tail" signals are used in the second step to switch the call data from the old path to the new path while preserving the cell sequence. Also, see Dommety '575 see col. 10, line 31-33, the second step redirects the sending of user data from the path that is being replaced ("previous/old") path to the new "optimized" path).

This limitation is taught by Dommety '575, and per Dommety '575, it is cleared that when establishing new connection after a handoff, a new optimized path/route can be used by identifying a specific node. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of admitted prior art and Lim '754, as taught by Dommety '575 for the purpose of reducing long-distance signaling for tracking mobiles and location management; see Dommety '575 col. 3, line 21-22. The motivation being that by selecting the optimized switch/node to establish the new/updated path, it can reduce the signaling/registration time.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art, Lim '754 and Dommety '575, as applied to claim 3 above, and further in view of Toth (U.S. Patent 5,708,655).

Regarding Claim 4, admitted prior art, Lim '754 and Dommety '575 disclose said specific packet node has means for setting of a new logical connection for the mobile station so that the IP packets, which destined for the mobile station, are received thereafter from the IP network, to the specific packet node, as described in Claim 1, 2, and 3 above.

Neither admitted prior art, Lim '754, nor Dommety '575 explicitly discloses said specific packet node (see Toth '655, GPSN 46 and SPSN 38; Fig. 4) notifying a home agent node (see Toth '655, GPSN 26 and SPSN 18; Fig. 4) of the mobile station connected to the IP network (see Toth '655, Internet 16, Fig. 4) and receiving notification transfers IP packets (see Toth '655 col. 7, line 56-67 and col. 8, line 1-11; by mapping the request for an IP address to a registration request, the registration request is forwarded to an SPSN, such as the SPSN 38. The SPSN 38 thereafter forwards the request for an IP address to an appropriate IAS, such as the IAS 48. A context for the wireless host 52 is set up in the SPSN 38. The GPSN 46 handling the address domain for the temporary IP addresses is either informed of the temporary IP address or can retrieve the temporary address from a location register, depending upon the system in which service is implemented. In the SPSN 38, mobile-originated, end-user data packets are encapsulated in IP packets to be tunneled to an appropriate GPSN 46 and, from there, forwarded to fixed hosts in external networks such as the fixed host 54, or to another GPSN, such as the GPSN 26, thereafter to locate another

wireless host, such as the host 32. When data is to be terminated at the wireless host 52, end-user packets of data are encapsulated in the GPSN, such as the GPSN 46, handling the temporary IP addresses and are thereafter tunneled through the backbone 44 to the SPSN, here SPSN 38, currently serving the wireless host 52).

This limitation is taught by Toth '655. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of admitted prior art, Lim '754 and Dommety '575, as taught by Toth '655 for the purpose of optimizing the routing of data to the wireless communication station. When routing of the data is optimized, communication delay times are minimized and throughput rates are maximized; see Toth '655 col. 4, line 16-18. The motivation being that by forwarding the address information regarding to the connection to the host/communication station, it can ensure the proper routing of packets and minimize the erroneous routing.

5. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art and Lim '754, as applied to claims 6 and 7 above, and further in view of Dommety (U.S. Patent 6,078,575).

Regarding Claim 7, both admitted prior art and Lim '754 disclose a step of canceling the second logical connection (see Lim '754 col. 7, line 32-44; if the PPP frame data is not transmitted, the RNC 400 or 410 or PDGN 600 drives a PPP link timer (S31 and S32). Thereafter, if the term set by the PPP link timer expires, the RNC 400 or PDGN 600 instructs to change the present active state to a dormant-open state (S32). If the PPP frame data is not transmitted in the dormant-open state, the RNC 400 or PDGN 600 drives a dormant timer

(S35 and S26). If the term set by the dormant timer expires, the RNC 400 informs the mobile switching center 500 to release a switching virtual circuit (SVC) (S37). Accordingly, no more PPP frame data of another mobile station exists, and thus the virtual network pipeline (VNP) is released), upon detecting that data transmission and reception in the second logical connection is ceased (see Lim '754 col. 7, line 52-59; if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)).

Neither admitted prior art nor Lim '754 explicitly discloses establishing a third logical connection to be used for an IP packet communication of the mobile station between the second radio access network and a second packet node which is preliminarily related with the second radio access network (see Dommety '575 col. 10, line 6-10, the inventive route optimization arrangement is performed in two steps. The first step identifies a so-called "switchover node/switch" that may be used to switch the connection from an established path to an optimized path. A new path segment is then established from the route optimization-initiating switch to the switchover node. So-called "Tail" signals are used in the second step to switch the call data from the old path to the new path while preserving the cell sequence. Also, see Dommety '575 see col. 10, line 31-33, the second step redirects the sending of user data from the path that is being replaced ("previous/old") path to the new "optimized" path).

This limitation is taught by Dommety '575, and per Dommety '575, it is cleared that when establishing new connection after a handoff, a new optimized path/route can be used by identifying a specific node. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of admitted prior art and Lim '754, as taught by Dommety '575 for the purpose of reducing long-distance signaling for tracking mobiles and location management; see Dommety '575 col. 3, line 21-22. The motivation being that by selecting the optimized switch/node to establish the new/updated path, it can reduce the signaling/registration time.

6. Claim 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art and Lim '754, as applied to claim 8 above, and further in view of Dommety (U.S. Patent 6,078,575).

Regarding Claim 11, both admitted prior art and Lim '754 disclose said control unit comprises: means for monitoring transmission data in the first logical connection (see Lim '754 col. 7, line 32-44; if the PPP frame data is not transmitted, the RNC 400 or 410 or PDGN 600 drives a PPP link timer (S31 and S32). Thereafter, if the term set by the PPP link timer expires, the RNC 400 or PDGN 600 instructs to change the present active state to a dormant-open state (S32). If the PPP frame data is not transmitted in the dormant-open state, the RNC 400 or PDGN 600 drives a dormant timer (S35 and S26). If the term set by the dormant timer expires, the RNC 400 informs the mobile switching center 500 to release a

switching virtual circuit (SVC) (S37). Accordingly, no more PPP frame data of another mobile station exists, and thus the virtual network pipeline (VNP) is released); and

means for switching the first logical connection to a second logical connection which is connected to a packet node when it is detected by the monitoring means that the transmission data is stopped (see Lim '754 col. 7, line 52-59; if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)).

Neither admitted prior art nor Lim '754 explicitly discloses switching the logical connection to a second packet node (see Dommety '575 col. 10, line 6-10, the inventive route optimization arrangement is performed in two steps. The first step identifies a so-called "switchover node/switch" that may be used to switch the connection from an established path to an optimized path. A new path segment is then established from the route optimization-initiating switch to the switchover node. So-called "Tail" signals are used in the second step to switch the call data from the old path to the new path while preserving the cell sequence. Also, see Dommety '575 see col. 10, line 31-33, the second step redirects the sending of user data from the path that is being replaced ("previous/old") path to the new "optimized" path).

This limitation is taught by Dommety '575, and per Dommety '575, it is cleared that when establishing new connection after a handoff, a new optimized path/route can be used by

identifying a second node. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of admitted prior art and Lim '754, as taught by Dommety '575 for the purpose of reducing long-distance signaling for tracking mobiles and location management; see Dommety '575 col. 3, line 21-22. The motivation being that by selecting the optimized second switch/node to establish the new/updated path, it can reduce the signaling/registration time.

Regarding Claim 12, both admitted prior art and Lim '754 disclose a base station controller wherein said second communication interface is connected to a communication network for connecting the plurality of packet nodes (see admitted prior art Fig.8; Packet Nodes 3A, 3B, and said switching means cancels the first logical connection and establishes a second logical connection connected to the packet node (see Lim '754 col. 7, line 52-59; if a certain mobile station 100 or 200 moves into the region of a new RNC and a handoff is generated (S42) in a state that the upper layer data is transmitted using the virtual network pipeline (S41), the present RNC instructs the PDGN 600 a handoff utilizing the network identification addresses IMSI and MIMSI of the previous RNC (S43). At this time, if the virtual network pipeline is not installed between the PDGN 600 and the new RNC, a new virtual network pipeline is newly installed (S44)), when said monitoring means detects the stop of transmission data (see Lim '754 col. 7, line 32-44; if the PPP frame data is not transmitted, the RNC 400 or 410 or PDGN 600 drives a PPP link timer (S31 and S32). Thereafter, if the term set by the PPP link timer expires, the RNC 400 or PDGN 600 instructs to change the present active state to a dormant-open state (S32). If the PPP frame data is not

transmitted in the dormant-open state, the RNC 400 or PDGN 600 drives a dormant timer (S35 and S26). If the term set by the dormant timer expires, the RNC 400 informs the mobile switching center 500 to release a switching virtual circuit (SVC) (S37). Accordingly, no more PPP frame data of another mobile station exists, and thus the virtual network pipeline (VNP) is released).

Neither admitted prior art nor Lim '754 explicitly discloses the second packet node, which is preliminarily designated to the base station controller (see Dommety '575 col. 10, line 6-10, the inventive route optimization arrangement is performed in two steps. The first step identifies a so-called "switchover node/switch" that may be used to switch the connection from an established path to an optimized path. A new path segment is then established from the route optimization-initiating switch to the switchover node. So-called "Tail" signals are used in the second step to switch the call data from the old path to the new path while preserving the cell sequence. Also, see Dommety '575 see col. 10, line 31-33, the second step redirects the sending of user data from the path that is being replaced ("previous/old") path to the new "optimized" path).

This limitation is taught by Dommety '575. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of admitted prior art and Lim '754, as taught by Dommety '575 for the same purpose as described above in Claim 11.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Olms can be reached on 703-305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Ian N Moore
Examiner
Art Unit 2661

INM
9/26/2003

KENNETH VANDERPUYE
PRIMARY EXAMINER